[13806/28]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	Examiner: Rebecca Y. Lee
Barbara HOPPE et al.	
For: SOLDER ALLOY, USE OF THE SOLDER ALLOY AND METHOD FOR PROCESSING, PARTICULARLY REPAIRING, WORKPIECES, PARTICULARLY GAS TURBINE COMPONENTS	
	Art Unit: 1793
Filed: March 29, 2007	
Serial No.: 10/581,778	

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Signature: /Helen Tam/
Helen Tam

REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41

SIR:

This paper is responsive to the "Examiner's Answer" dated July 23, 2010 in connection with the above-captioned application. For the reasons more fully set forth below and in the "Appeal Brief Pursuant to 37 C.F.R. § 41.37" ("the Appeal Brief"), it is respectfully submitted that the present rejections should be reversed.

I. ARGUMENTS

A. Rejection of Claims 24 to 30, 32, and 33 Under 35 U.S.C. § 103(a)

Claims 24 to 30, 32, and 33 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Shaw et al. and Chesnes et al. It is respectfully submitted that the combination of Shaw et al. and Chesnes et al. does not render unpatentable the present claims for at least the following reasons.

Claim 24 relates to a solder alloy based on nickel, including at least the following elements: chromium, cobalt, molybdenum and nickel; and *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C.*

The combination of Shaw et al. and Chesnes et al. does not disclose, or even suggest, all of the claimed features of claim 24. In this regard, nowhere does Shaw et al. even refer to a combination of palladium, boron, and yttrium. Indeed, the Final Office Action at page 3 admits that "Shaw et al. neither expressly teach the alloy further comprises palladium in the claimed amount …, nor teach the claimed melting range of the alloy." Therefore, Shaw et al. does not disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C.*

Further, Chesnes et al. also does not disclose, or even suggest, all of the claimed features of claim 24. Instead, Chesnes et al. merely indicates a braze alloy powder mixture including a low-melt powder composition and a high-melt powder composition. Chesnes et al., ¶ 6. In addition, the low-melt powder composition melts at a range of 2100°F +/- 100°F (~1093°C to ~1204°C), and the high-melt powder composition melts above 2400°F (~1315°C). Chesnes et al., ¶ 24. Thus, the braze alloy powder mixture of Chesnes et al. does not have a defined melting range. Instead, the low-melt composition melts between about ~1093°C and ~1204°C, and the high-melt composition melts above ~1315°C. Thus, Chesnes et al. describes compositions that have melting ranges outside the range of about 1200°C to about 1260°C. Accordingly, Chesnes et al. teaches away from a combination of palladium, boron, and yttrium configured to set a melting range between about 1200°C to about 1260°C.

As a result, although the combination of Shaw et al. and Chesnes et al. may mention each of palladium, boron, and yttrium, the combination of Shaw et al. and Chesnes et al. does not disclose a combination of palladium, boron, and yttrium configured to set a melting range between about 1200°C to about 1260°C because, as more fully set forth above, Shaw et al. does not even mention such a melting range and Chesnes et al., in fact, teaches away from such a melting range. Therefore, the combination of Shaw et al. and Chesnes et al. does not disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C.*

Nonetheless, the Advisory Action at page 8 conclusorily asserts that "one of ordinary skill in the art would have expected such alloy to have substantially the same

melting point as claimed." Appellants respectfully disagree. In this regard, although Chesnes et al. describes compositions that may include each of palladium, boron, and yttrium, Chesnes et al. explicitly states that the melting ranges of its low-melt and high-melt powder compositions lie outside the claimed range recited in claim 24. Thus, in direct contrast to the assertion of the Advisory Action, one of ordinary skill in the art would understand from the disclosures of Shaw et al. and Chesnes et al. that an alloy including palladium, boron, and yttrium would have a melting range lying outside of the claimed range, as clearly described by Chesnes et al., not within the claimed range recited in claim 24.

Accordingly, it is respectfully submitted that the combination of Shaw et al. and Chesnes et al. does not disclose, or even suggest, all of the features included in claim 24. Therefore, it is respectfully submitted that the combination of Shaw et al. and Chesnes et al. does not render unpatentable claim 24 for at least the foregoing reasons.

Thus, as for claims 25 to 30, 32, and 33, which depend from and therefore include all of the features included in claim 24, it is respectfully submitted that the combination of Shaw et al. and Chesnes et al. does not render unpatentable these dependent claims for at least the reasons more fully set forth above.

In view of all of the foregoing, reversal of this rejection is respectfully requested.

B. Rejection of Claims 24 and 34 Under 35 U.S.C. § 103(a)

Claims 24 and 34 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Shaw et al., U.S. Patent No. 4,802,933 ("Rabinkin"), and Japanese Patent Application Publication No. 63-65044 ("Wakushima et al."). It is respectfully submitted that the combination of Shaw et al., Rabinkin, and Wakushima et al. does not render unpatentable the present claims for at least the following reasons.

The combination of Shaw et al., Rabinkin, and Wakushima et al. does not disclose, or even suggest, all of the claimed features of claim 24. As more fully set forth above and as admitted by the Final Office Action at page 3, Shaw et al. does not disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C.* Neither Rabinkin nor Wakushima et al. cures the critical deficiencies of Shaw et al.

In this regard, although Rabinkin refers to alloys including palladium, Rabinkin explicitly teaches away from the inclusion of boron in the alloys by stating that "alloys containing boron … are **not suitable** for brazing products designed to withstand high temperature environments." Col. 1, lines 30 to 45 (emphasis added). Thus, Rabinkin teaches

away from the feature of *a combination of palladium, boron, and yttrium*. Further, Rabinkin merely describes a melting temperature range of between about 920°C and about 1020°C. Col. 3, lines 59 to 63. Thus, Rabinkin does not disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C*. Further, Wakushima et al. merely describes using boron as a melting point depressant. However, nowhere does Wakushima et al. disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C*. Therefore, the combination of Shaw et al., Rabinkin, and Wakushima et al. does not disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C*.

As a result, although the combination of Shaw et al., Rabinkin, and Wakushima et al. may mention each of palladium, boron, and yttrium, the combination of Shaw et al., Rabinkin, and Wakushima et al. does not disclose a combination of palladium, boron, and yttrium configured to set a melting range between about 1200°C to about 1260°C because, as more fully set forth above, Shaw et al. does not even mention such a melting range, Rabinkin specifically teaches away from the inclusion of boron and also does not disclose such a melting range, and Wakushima et al. also does not refer to such a melting range. Therefore, the combination of Shaw et al., Rabinkin, and Wakushima et al. does not disclose, or even suggest, the feature of *a combination of palladium, boron, and yttrium configured to set a melting range of the solder alloy in a range of from about 1200°C to about 1260°C*.

Nonetheless, the Examiner's Answer at pages 8 to 9 conclusorily asserts that "one of ordinary skill in the art would have expected such alloy to have substantially the same melting point as claimed." Appellants respectfully disagree. In this regard, Rabinkin specifically teaches away from the inclusion of boron because it is "**not suitable** for brazing products designed to withstand high temperature environments." Thus, it is respectfully submitted that one of ordinary skill in the art combining the disclosures of Shaw et al., Rabinkin, and Wakushima et al. would not select an alloy including boron. As a result, the combined disclosures of Shaw et al, Rabinkin, and Wakushima et al. do not disclose the combination of palladium, boron, and yttrium. Even if the combination of Shaw et al, Rabinkin, and Wakushima et al. did disclose the combination of palladium, boron, and yttrium (which is not conceded by Appellants), none of Shaw et al, Rabinkin, and

Wakushima et al. discloses a melting range between about 1200°C to about 1260°C. Indeed, in this regard, only Rabinkin describes a melting temperature range of its composition between about 920°C and about 1020°C, which clearly lies outside of the claimed range recited in claim 24.

Regarding the contention that "the amount of palladium in the alloy is a result effective variable since it would directly affect the mechanical properties of the alloy as evidenced by [Rabinkin]," nothing in the disclosure of Rabinkin constitutes a disclosure that ***an amount of palladium*** is a result-effective variable, *i.e.*, a variable which achieves a recognized result. Rather, Rabinkin merely states at col. 1, lines 22 to 25 that "[b]razing filler metals consisting of nickel-palladium-based alloys have been developed which exhibit high temperature strength, good corrosion resistance and good erosion resistance." Nothing in the foregoing statement constitutes a disclosure that ***an amount of palladium*** in a nickel-palladium-based alloy is a variable that achieves a recognized result relating to high temperature strength, good corrosion resistance, good erosion resistance, or otherwise. Accordingly, the present record does not support the contention that ***an amount of palladium*** constitutes a result-effective variable. As such, the present record does not support the contention that "one of ordinary skill in the art would have found it obvious to vary the amount of palladium in the alloy of Shaw et al. via routine optimization in order to achieve a solder alloy with desired high temperature strength, corrosion resistance and erosion resistance." In this regard, the Board's attention is respectfully directed to M.P.E.P. § 2144.05, which makes plain that a particular parameter must first be recognized in the prior art as a result-effective variable, *i.e.*, a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *See also*, *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result- effective variable.).

Accordingly, it is respectfully submitted that the combination of Shaw et al., Rabinkin, and Wakushima et al. does not disclose, or even suggest, all of the features included in claim 24, and its dependent claim 34. As such, it is respectfully submitted that the combination of Shaw et al., Rabinkin, and Wakushima et al. does not render unpatentable claim 24, and its dependent claim 34.

In view of all of the foregoing, reversal of this rejection is respectfully requested.

II. CONCLUSIONS

For at least the reasons indicated above and those set forth in the Appeal Brief, Appellants respectfully submit that the art of record does not disclose or suggest the subject matter as recited in the claims of the above-identified application. Accordingly, it is respectfully submitted that the subject matter as set forth in the claims of the present application is patentable.

In view of all of the foregoing, reversal of all outstanding rejections is therefore respectfully requested.

Respectfully submitted,

Dated: September 23, 2010

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